December 10, 2012

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period August 1, 2012 through August 31, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,

Ty L. Morris, P.E., R.G.
Vice President

TLM/jms
Enclosures
c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering

07CR 4.2

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Leadwood Mine Tailings Site
Leadwood, Missouri
Removal Action - Monthly Progress Report
Period: August 1, 2012 – August 31, 2012

1. **Actions Performed or Completed This Period:**
   a. No activities were completed at the site during this period.
2. **Data and Results Received This Period:**
   a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
   b. During this period, the Ambient Air Monitoring Reports for June 2012 and Second Quarter 2012 were received. Any issues identified in these reports are discussed below. A copy of these documents has been sent to your attention.

      The June 2012 Ambient Air Monitoring Report noted the following:
      - The action levels for lead and dust were not exceeded.
      - No samples were taken with the Big River #4 QA TSP monitor on 06/07/12 due to mechanical failure. Upon discovery, the issue was corrected.
      - No samples were taken with the TSP monitors on 06/28/12 due to the remediation crew being in training.
      - There was a QA blank filter for the Leadwood #2 (Office) TSP and PM_{10} monitors on 06/29/12.

      The Second Quarter 2012 Ambient Air Monitoring Report noted the following:
      - The action levels for lead and dust were not exceeded.
      - No samples were taken with the Leadwood #3 (school) PM_{10} monitor on 04/06/12 due to mechanical failure. Upon discovery, the issue was corrected.
      - No samples were taken with the Big River #4 PM_{10} monitor on 04/21/12 due to mechanical failure. Upon discovery, the issue was corrected.
      - No samples were taken with the TSP monitors on 05/28/12 due to the holiday.
      - There was a QA blank filter for the Leadwood #1 (Wortham Road) TSP and PM_{10} monitors on 05/30/12.
      - No samples were taken with the Big River #4 QA TSP monitor on 06/07/12 due to mechanical failure. Upon discovery, the issue was corrected.
      - No samples were taken with the TSP monitors on 06/28/12 due to the remediation crew being in training.
      - There was a QA blank filter for the Leadwood #2 (Office) TSP and PM_{10} monitors on 06/29/12.
3. **Scheduled Activities not Completed This Period:**
   a. None.
4. **Planned Activities for Next Period:**
   a. Continue vegetation maintenance activities. The use of biosolids will only be continued if a biosolids management plan has been submitted to and approved by EPA.
   b. It is anticipated that EPA will use this site as a soil repository in the future. Preparations for these activities will continue.
   c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
   d. Complete air monitoring activities as described in the Removal Action Work Plan.
5. **Changes in Personnel:**
   a. None.

6. **Issues or Problems Arising This Period:**

   a. None.

7. **Resolution of Issues or Problems Arising This Period:**

   a. None.

End of Monthly Progress Report

September 05, 2012

Allison Olds
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5007
FAX: (573) 638-5001

RE: Leadwood MTS-25/86-0013 **WorkOrder:** 12080809

Dear Allison Olds:

TEKLAB, INC received 5 samples on 8/17/2012 11:47:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

This reporting package includes the following:

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Chain of Custody	Appended

Client: Barr Engineering Company
Work Order: 12080809

Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
M - Manual Integration used to determine area response	ND - Not Detected at the Reporting Limit
R - RPD outside accepted recovery limits	S - Spike Recovery outside recovery limits
X - Value exceeds Maximum Contaminant Level	

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Cooler Receipt Temp: 1.6 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2013	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2013	Collinsville
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2013	Collinsville

Client: Barr Engineering Company
Work Order: 12080809
Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12
Lab ID: 12080809-001
Client Sample ID: LW-001
Matrix: AQUEOUS
Collection Date: 08/16/2012 8:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200	S	**513**	mg/L	20	08/20/2012 20:01	R167131
MS and/or MSD did not recover within control limits due to matrix interference.								
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.91**		1	08/17/2012 14:45	R167049
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**900**	mg/L	1	08/17/2012 13:45	R167060
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**< 6**	mg/L	1	08/20/2012 12:57	R167077
STANDARD METHODS 2540 F								
Solids, Settleable		0.1		**< 0.1**	ml/L	1	08/17/2012 12:57	R167009
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**2.3**	mg/L	1	08/21/2012 0:55	R167121
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**2.40**	µg/L	1	09/04/2012 11:26	80707
Zinc	NELAP	10.0		**3340**	µg/L	1	09/04/2012 11:26	80707
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**2.60**	µg/L	1	09/03/2012 10:45	80714
Zinc	NELAP	10.0		**3600**	µg/L	1	09/04/2012 8:22	80714
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		**3.25**	µg/L	1	08/21/2012 12:18	80718
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		**2.06**	µg/L	1	08/21/2012 11:58	80706

Client: Barr Engineering Company
Work Order: 12080809
Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12
Lab ID: 12080809-002
Client Sample ID: LW-002
Matrix: AQUEOUS
Collection Date: 08/16/2012 9:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		**500**	mg/L	20	08/20/2012 20:12	R167131
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**7.90**		1	08/17/2012 14:45	R167049
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**820**	mg/L	1	08/17/2012 13:45	R167060
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**< 6**	mg/L	1	08/20/2012 13:07	R167077
STANDARD METHODS 2540 F								
Solids, Settleable		0.1		**< 0.1**	ml/L	1	08/17/2012 12:57	R167009
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**3.0**	mg/L	1	08/20/2012 20:35	R167121
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 11:32	80707
Zinc	NELAP	10.0		**2190**	µg/L	1	09/04/2012 11:32	80707
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 8:39	80714
Zinc	NELAP	10.0		**2470**	µg/L	1	09/04/2012 8:39	80714
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		4.00	X	**20.6**	µg/L	2	08/21/2012 8:44	80718
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00	X	**11.5**	µg/L	1	08/21/2012 12:15	80706

Client: Barr Engineering Company
Work Order: 12080809
Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12
Lab ID: 12080809-003
Client Sample ID: LW-Dup
Matrix: AQUEOUS
Collection Date: 08/16/2012 8:20

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		**42**	mg/L	1	08/21/2012 15:18	R167173
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**8.12**		1	08/17/2012 14:45	R167049
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**280**	mg/L	1	08/17/2012 13:45	R167060
STANDARD METHODS 2540 D								
Total Suspended Solids		6	R	**6**	mg/L	1	08/20/2012 13:07	R167077
Sample and Duplicate RPD meet the SOP QC criteria for low level results. Data is reportable.								
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**2.0**	mg/L	1	08/20/2012 20:41	R167121
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 12:16	80707
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	09/04/2012 12:16	80707
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 8:45	80714
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	09/04/2012 8:45	80714
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		**< 2.00**	µg/L	1	08/21/2012 8:54	80718
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		**< 2.00**	µg/L	1	08/20/2012 17:59	80706

Client: Barr Engineering Company
Work Order: 12080809
Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12
Lab ID: 12080809-004
Client Sample ID: LW-DS
Matrix: AQUEOUS
Collection Date: 08/16/2012 7:50

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	50		101	mg/L	5	08/21/2012 13:07	R167173
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		7.98		1	08/17/2012 14:45	R167049
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		360	mg/L	1	08/17/2012 13:45	R167060
STANDARD METHODS 2540 D								
Total Suspended Solids		6		6	mg/L	1	08/20/2012 13:07	R167077
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		1.8	mg/L	1	08/20/2012 20:47	R167121
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	09/04/2012 12:22	80707
Zinc	NELAP	10.0		< 10.0	µg/L	1	09/04/2012 12:22	80707
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	09/04/2012 8:51	80714
Zinc	NELAP	10.0		< 10.0	µg/L	1	09/04/2012 8:51	80714
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		2.87	µg/L	1	08/21/2012 12:21	80718
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		< 2.00	µg/L	1	08/20/2012 18:02	80706

Client: Barr Engineering Company
Work Order: 12080809
Client Project: Leadwood MTS-25/86-0013
Report Date: 05-Sep-12
Lab ID: 12080809-005
Client Sample ID: LW-US
Matrix: AQUEOUS
Collection Date: 08/16/2012 8:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		**42**	mg/L	1	08/21/2012 15:26	R167173
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH		1.00		**8.10**		1	08/17/2012 14:45	R167049
STANDARD METHODS 2340 C								
Hardness, as (CaCO3)		5		**300**	mg/L	1	08/17/2012 13:45	R167060
STANDARD METHODS 2540 D								
Total Suspended Solids		6		**< 6**	mg/L	1	08/20/2012 13:07	R167077
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)		1.0		**1.9**	mg/L	1	08/20/2012 20:53	R167121
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 12:28	80707
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	09/04/2012 12:28	80707
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		**< 2.00**	µg/L	1	09/04/2012 8:57	80714
Zinc	NELAP	10.0		**< 10.0**	µg/L	1	09/04/2012 8:57	80714
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead		2.00		**< 2.00**	µg/L	1	08/21/2012 9:01	80718
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead		2.00		**< 2.00**	µg/L	1	08/20/2012 18:06	80706

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
12080809-001	LW-001	Aqueous	5	08/16/2012 8:35
12080809-002	LW-002	Aqueous	5	08/16/2012 9:30
12080809-003	LW-Dup	Aqueous	5	08/16/2012 8:20
12080809-004	LW-DS	Aqueous	5	08/16/2012 7:50
12080809-005	LW-US	Aqueous	5	08/16/2012 8:10

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Sample ID	Client Sample ID / Test Name	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
12080809-001A	LW-001	08/16/2012 8:35	08/17/2012 11:47		
	Standard Methods 2540 F				08/17/2012 12:57
12080809-001B	LW-001	08/16/2012 8:35	08/17/2012 11:47		
	EPA 600 375.2 Rev 2.0 1993 (Total)				08/20/2012 20:01
	Standard Method 4500-H B, Laboratory Analyzed				08/17/2012 14:45
	Standard Methods 2340 C				08/17/2012 13:45
	Standard Methods 2540 D				08/20/2012 12:57
12080809-001C	LW-001	08/16/2012 8:35	08/17/2012 11:47		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/03/2012 10:45
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/04/2012 8:22
	Standard Methods 3030 E, 3113 B, Metals by GFAA			08/17/2012 17:35	08/21/2012 12:18
12080809-001D	LW-001	08/16/2012 8:35	08/17/2012 11:47		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			08/17/2012 13:26	09/04/2012 11:26
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			08/17/2012 12:58	08/21/2012 11:58
12080809-001E	LW-001	08/16/2012 8:35	08/17/2012 11:47		
	Standard Methods 5310 C, Organic Carbon				08/21/2012 0:55
12080809-002A	LW-002	08/16/2012 9:30	08/17/2012 11:47		
	Standard Methods 2540 F				08/17/2012 12:57
12080809-002B	LW-002	08/16/2012 9:30	08/17/2012 11:47		
	EPA 600 375.2 Rev 2.0 1993 (Total)				08/20/2012 20:12
	Standard Method 4500-H B, Laboratory Analyzed				08/17/2012 14:45
	Standard Methods 2340 C				08/17/2012 13:45
	Standard Methods 2540 D				08/20/2012 13:07
12080809-002C	LW-002	08/16/2012 9:30	08/17/2012 11:47		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/04/2012 8:39
	Standard Methods 3030 E, 3113 B, Metals by GFAA			08/17/2012 17:35	08/21/2012 8:44
12080809-002D	LW-002	08/16/2012 9:30	08/17/2012 11:47		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			08/17/2012 13:26	09/04/2012 11:32
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			08/17/2012 12:58	08/21/2012 12:15
12080809-002E	LW-002	08/16/2012 9:30	08/17/2012 11:47		
	Standard Methods 5310 C, Organic Carbon				08/20/2012 20:35
12080809-003A	LW-Dup	08/16/2012 8:20	08/17/2012 11:47		
	Standard Method 4500-H B, Laboratory Analyzed				08/17/2012 14:45
	Standard Methods 2540 D				08/20/2012 13:07
12080809-003B	LW-Dup	08/16/2012 8:20	08/17/2012 11:47		
	EPA 600 375.2 Rev 2.0 1993 (Total)				08/21/2012 15:18

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			Prep Date/Time	Analysis Date/Time
	Standard Methods 2340 C				08/17/2012 13:45
12080809-003C	LW-Dup	08/16/2012 8:20	08/17/2012 11:47		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/04/2012 8:45
	Standard Methods 3030 E, 3113 B, Metals by GFAA			08/17/2012 17:35	08/21/2012 8:54
12080809-003D	LW-Dup	08/16/2012 8:20	08/17/2012 11:47		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			08/17/2012 13:26	09/04/2012 12:16
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			08/17/2012 12:58	08/20/2012 17:59
12080809-003E	LW-Dup	08/16/2012 8:20	08/17/2012 11:47		
	Standard Methods 5310 C, Organic Carbon				08/20/2012 20:41
12080809-004A	LW-DS	08/16/2012 7:50	08/17/2012 11:47		
	Standard Method 4500-H B, Laboratory Analyzed				08/17/2012 14:45
	Standard Methods 2540 D				08/20/2012 13:07
12080809-004B	LW-DS	08/16/2012 7:50	08/17/2012 11:47		
	EPA 600 375.2 Rev 2.0 1993 (Total)				08/21/2012 13:07
	Standard Methods 2340 C				08/17/2012 13:45
12080809-004C	LW-DS	08/16/2012 7:50	08/17/2012 11:47		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/04/2012 8:51
	Standard Methods 3030 E, 3113 B, Metals by GFAA			08/17/2012 17:35	08/21/2012 12:21
12080809-004D	LW-DS	08/16/2012 7:50	08/17/2012 11:47		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			08/17/2012 13:26	09/04/2012 12:22
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			08/17/2012 12:58	08/20/2012 18:02
12080809-004E	LW-DS	08/16/2012 7:50	08/17/2012 11:47		
	Standard Methods 5310 C, Organic Carbon				08/20/2012 20:47
12080809-005A	LW-US	08/16/2012 8:10	08/17/2012 11:47		
	Standard Method 4500-H B, Laboratory Analyzed				08/17/2012 14:45
	Standard Methods 2540 D				08/20/2012 13:07
12080809-005B	LW-US	08/16/2012 8:10	08/17/2012 11:47		
	EPA 600 375.2 Rev 2.0 1993 (Total)				08/21/2012 15:26
	Standard Methods 2340 C				08/17/2012 13:45
12080809-005C	LW-US	08/16/2012 8:10	08/17/2012 11:47		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			08/17/2012 16:27	09/04/2012 8:57
	Standard Methods 3030 E, 3113 B, Metals by GFAA			08/17/2012 17:35	08/21/2012 9:01
12080809-005D	LW-US	08/16/2012 8:10	08/17/2012 11:47		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			08/17/2012 13:26	09/04/2012 12:28
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			08/17/2012 12:58	08/20/2012 18:06
12080809-005E	LW-US	08/16/2012 8:10	08/17/2012 11:47		

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Sample ID	Client Sample ID	Collection Date	Received Date		
	Test Name			**Prep Date/Time**	**Analysis Date/Time**
	Standard Methods 5310 C, Organic Carbon				08/20/2012 20:53

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R167131 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						08/20/2012

Batch R167131 **SampType:** LCS Units mg/L
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		19	20	0	96.8	90	110	08/20/2012

Batch R167131 **SampType:** MS Units mg/L
SampID: 12080809-001BMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	200	S	740	200	512.8	113.8	90	110	08/20/2012

Batch R167131 **SampType:** MSD Units mg/L RPD Limit 10
SampID: 12080809-001BMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate	200	S	743	200	512.8	114.9	740.4	0.30	08/20/2012

Batch R167173 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		< 10						08/21/2012

Batch R167173 **SampType:** LCS Units mg/L
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	10		19	20	0	96.8	90	110	08/21/2012

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R167049 **SampType:** LCS Units
SampID: LCS-R167049

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lab pH	1.00		6.98	7.00	0	99.7	99.1	100.8	08/17/2012

Batch R167049 **SampType:** DUP Units RPD Limit 10
SampID: 12080809-001BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		7.92				7.910	0.13	08/17/2012

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R167049 **SampType:** DUP Units RPD Limit 10
SampID: 12080809-002BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**7.90**				7.900	0.00	08/17/2012

Batch R167049 **SampType:** DUP Units RPD Limit 10
SampID: 12080809-003ADUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**8.13**				8.120	0.12	08/17/2012

Batch R167049 **SampType:** DUP Units RPD Limit 10
SampID: 12080809-004ADUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**7.97**				7.980	0.13	08/17/2012

Batch R167049 **SampType:** DUP Units RPD Limit 10
SampID: 12080809-005ADUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		**8.09**				8.100	0.12	08/17/2012

STANDARD METHODS 2340 C

Batch R167060 **SampType:** MBLK Units **mg/L**
SampID: MB-R167060

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**< 5**						08/17/2012

Batch R167060 **SampType:** LCS Units **mg/L**
SampID: LCS-R167060

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**1000**	1000	0	100.0	90	110	08/17/2012

Batch R167060 **SampType:** MS Units **mg/L**
SampID: 12080809-001BMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)	5		**1300**	400	900.0	100.0	85	115	08/17/2012

Batch R167060 **SampType:** MSD Units **mg/L** RPD Limit 10
SampID: 12080809-001BMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Hardness, as (CaCO3)	5		**1300**	400	900.0	100.0	1300	0.00	08/17/2012

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

STANDARD METHODS 2540 D

Batch R167077 **SampType:** MBLK Units mg/L
SampID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6.00		< 6.00						08/20/2012
Total Suspended Solids	6		< 6						08/20/2012

Batch R167077 **SampType:** LCS Units mg/L
SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6		94	100	0	94.0	85	115	08/20/2012
Total Suspended Solids	6		107	100	0	107.0	85	115	08/20/2012
Total Suspended Solids	6		97	100	0	97.0	85	115	08/20/2012
Total Suspended Solids	6		87	100	0	87.0	85	115	08/20/2012
Total Suspended Solids	6		88	100	0	88.0	85	115	08/20/2012

Batch R167077 **SampType:** DUP Units mg/L RPD Limit 15
SampID: 12080809-003A DUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Suspended Solids	6	R	7				6.000	15.38	08/20/2012

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch R167121 **SampType:** MBLK Units mg/L
SampID: ICB/MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	1.0		< 1.0						08/20/2012

Batch R167121 **SampType:** LCS Units mg/L
SampID: CCV/LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	5.0		48.0	48.2	0	99.6	90	110	08/20/2012

Batch R167121 **SampType:** MS Units mg/L
SampID: 12080809-001EMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	1.0		7.1	5.0	2.310	96.0	85	115	08/21/2012

Batch R167121 **SampType:** MSD Units mg/L RPD Limit 10
SampID: 12080809-001EMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Organic Carbon (TOC)	1.0		7.0	5.0	2.310	94.6	7.110	0.99	08/21/2012

Client: Barr Engineering Company

Work Order: 12080809

Client Project: Leadwood MTS-25/86-0013

Report Date: 05-Sep-12

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 80707 **SampType:** MBLK Units µg/L
SampID: MB-80707

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**< 2.00**	2.00	0	0	-100	100	09/04/2012
Zinc	10.0		**< 10.0**	10.0	0	0	-100	100	09/04/2012

Batch 80707 **SampType:** LCS Units µg/L
SampID: LCS-80707

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**47.2**	50.0	0	94.4	85	115	09/04/2012
Zinc	10.0		**490**	500	0	98.1	85	115	09/04/2012

Batch 80707 **SampType:** MS Units µg/L
SampID: 12080809-002DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**50.2**	50.0	0.8	98.8	75	125	09/04/2012
Zinc	10.0		**2800**	500	2191	121.8	75	125	09/04/2012

Batch 80707 **SampType:** MSD Units µg/L RPD Limit **20**
SampID: 12080809-002DMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cadmium	2.00		**50.2**	50.0	0.8	98.8	50.2	0.00	09/04/2012
Zinc	10.0		**2800**	500	2191	121.0	2800	0.14	09/04/2012

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 80714 **SampType:** MBLK Units µg/L
SampID: MB-80714

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**< 2.00**	2.00	0	15.0	-100	100	09/04/2012
Cadmium	2.00		**< 2.00**	2.00	0	0	-100	100	08/20/2012
Cadmium	2.00		**< 2.00**	2.00	0	0	-100	100	09/03/2012
Zinc	10.0		**< 10.0**	10.0	0	24.0	-100	100	09/04/2012

Batch 80714 **SampType:** LCS Units µg/L
SampID: LCS-80714

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**49.8**	50.0	0	99.6	85	115	08/20/2012
Cadmium	2.00		**51.9**	50.0	0	103.8	85	115	09/03/2012
Cadmium	2.00		**52.5**	50.0	0	105.0	85	115	09/04/2012
Zinc	10.0		**552**	500	0	110.3	85	115	09/04/2012

Batch 80714 **SampType:** MS Units µg/L
SampID: 12080809-001CMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		**50.3**	50.0	2.6	95.4	75	125	09/03/2012
Zinc	10.0		**4010**	500	3598	82.6	75	125	09/04/2012

Client: Barr Engineering Company

Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809

Report Date: 05-Sep-12

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 80714 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 12080809-001CMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Cadmium	2.00		**50.3**	50.0	2.6	95.4	50.3	0.00	09/03/2012
Zinc	10.0		**4010**	500	3598	82.2	4011	0.05	09/04/2012

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 80718 **SampType:** MBLK Units µg/L

SampID: MB-80718

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		**< 2.00**	2.00	0	0	-100	100	08/20/2012

Batch 80718 **SampType:** LCS Units µg/L

SampID: LCS-80718

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		**15.3**	15.0	0	102.1	85	115	08/20/2012

Batch 80718 **SampType:** MS Units µg/L

SampID: 12080809-002CMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	4.00		**35.8**	15.0	20.5684	101.2	70	130	08/21/2012

Batch 80718 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 12080809-002CMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead	4.00		**33.1**	15.0	20.5684	83.8	35.7534	7.61	08/21/2012

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 80706 **SampType:** MBLK Units µg/L

SampID: MB-80706

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		**< 2.00**	2.00	0	0	-100	100	08/21/2012

Batch 80706 **SampType:** LCS Units µg/L

SampID: LCS-80706

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		**13.4**	15.0	0	89.3	85	115	08/21/2012

Batch 80706 **SampType:** MS Units µg/L

SampID: 12080809-001DMS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead	2.00		**14.4**	15.0	2.0632	82.2	70	130	08/21/2012

Client: Barr Engineering Company

Work Order: 12080809

Client Project: Leadwood MTS-25/86-0013

Report Date: 05-Sep-12

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 80706 **SampType:** MSD Units µg/L RPD Limit **20**

SampID: 12080809-001DMSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead	2.00		**13.8**	15.0	2.0632	78.4	14.3925	4.05	08/21/2012

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Barr Engineering Company
Client Project: Leadwood MTS-25/86-0013

Work Order: 12080809
Report Date: 05-Sep-12

Carrier: Ron Korte

Received By: JMH

Completed by: Timothy W. Mathis
On: 17-Aug-12

Reviewed by: Elizabeth A. Hurley
On: 17-Aug-12

Pages to follow: Chain of custody [1] Extra pages included [0]

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	1.6		
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐		
Chain of custody present?	Yes ☑	No ☐					
Chain of custody signed when relinquished and received?	Yes ☑	No ☐					
Chain of custody agrees with sample labels?	Yes ☑	No ☐					
Samples in proper container/bottle?	Yes ☑	No ☐					
Sample containers intact?	Yes ☑	No ☐					
Sufficient sample volume for indicated test?	Yes ☑	No ☐					
All samples received within holding time?	Yes ☑	No ☐					
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐				
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐					

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials	☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers	☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐		
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA	☑

Any No responses must be detailed below or on the COC.

Custody seal(s) intact on shipping container/cooler. RK 8/17/12

Print Form

Teklab Chain of Custody

Pg

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax:(618)344-1005

Barr Engineering Co.

Are the samples chilled? (•) Yes ( ) No with: (•) Ice ( ) Blue ice

1001 Diamond Ridge, Suite 1100

Cooler Temp 1.6 Sampler Chris Schulte

Jefferson City | MO | 65109

Comments: Invoice to Mark Nations. Results to Allison Olds and Mark N
Matrix is surface water.
Metals = Cd, Pb, Zn

Leadwood MTS - 25/86-0013

Contact Allison Olds eMail aolds@barr.com Phone 573-638-5007 Requested Due Date Standard Billi

Custody SEALS were in place, RK 8-17-12

Lab Use	Sample ID	Sample Date/Time	Preservative	Matrix	pH	T.S.S.	Sulfate	Settleable Solids	T.O.C.	Total Metals	Dissolved Metals
12050809-01	LW-001	8-16-12 08:35	Unpres 5	Aqueous	☒	☒	☒	☒	☒	☒	☒
02	LW-002	8-16-12 09:30	Unpres 5	Aqueous	☒	☒	☒	☒	☒	☒	☒
03	LW-Dup	8-16-12 8:20	Unpres 5	Aqueous	☒	☒	☒	☐	☒	☒	☒
04	LW-DS	8-16-12 07:50	Unpres 5	Aqueous	☒	☒	☒	☐	☒	☒	☒
05	LW-US	8-16-12 08:10	Unpres 5	Aqueous	☒	☒	☒	☐	☒	☒	☒
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐

Relinquished By *	Date/Time	Received By
Steve Mo[illegible] / Chris Schulte	8-16-12 13:00	Ron [illegible]
Ken [illegible]	8/17/12 11:47	[illegible]

* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the autho